

EXHIBIT PP

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF PUERTO RICO

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In re:	:
THE FINANCIAL OVERSIGHT AND	:
MANAGEMENT BOARD FOR PUERTO RICO	:
As a representative of	:
THE COMMONWEALTH OF PUERTO RICO, et al.	:
Debtor	:
-----X	:
In re:	: Case No. 3:17-bk-03283 (LTS)
THE FINANCIAL OVERSIGHT AND	: Case No. 3:17-cv-01685 (LTS)
MANAGEMENT BOARD FOR PUERTO RICO	: Case No. 3:17-bk-03566 (LTS)
As a representative of	:
THE EMPLOYEES RETIREMENT SYSTEM OF THE	:
GOVERNMENT OF PUERTO RICO,	:
Debtor.	:
	:
	:
-----X	:

**EXPERT REPORT OF
ANDREW A. SAMWICK, PH.D.**

May 30, 2019

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LIST OF EXHIBITS

- Exhibit 1. Expert CV – See Attached
- Exhibit 2. Materials Considered – See Attached
- Exhibit 3. Changes in Net Fiduciary Position, Selected Years
- Exhibit 4. Actual Versus Required Employer Contributions

I. Qualifications

1. I am the Sandra L. and Arthur L. Irving '72a P'10 Professor of Economics and the Director of the Nelson A. Rockefeller Center at Dartmouth College. I have expertise in the fields of public economics and finance, including the economics of retirement systems like Social Security and employer-provided pensions. I have consulted on one prior legal case concerning public-sector pension plans but have never provided expert testimony in State or Federal Courts.
2. I received my A.B. *summa cum laude* with a major in Economics from Harvard College in 1989 and my Ph.D., also in Economics, from the Massachusetts Institute of Technology in 1993. I have taught courses in Economics and Public Policy at Dartmouth College since joining the faculty in 1994. I am a Research Associate of the National Bureau of Economic Research, with appointments in both the Aging and Public Economics Programs.
3. I have previously served on technical panels for the Social Security Advisory Board (1999, 2011) on the assumptions and methods used by the Social Security Administration to make long-term projections. In 1995-1996, I served as a consultant to the Pension Benefit Guaranty Corporation on its Pension Insurance Modeling System (PIMS). I have testified before Congressional committees on Social Security reform on three occasions. I have served on the editorial boards of a number of journals, including my present service at the *Journal of Pension Economics and Finance*.
4. My scholarly work has been published in *American Economic Review*, *Journal of Political Economy*, *Journal of Finance*, *Journal of Monetary Economics*, *Journal of Public Economics*, *Journal of Development Economics*, *Review of Economics and Statistics*, and a number of specialized journals and conference volumes. Much of that research has considered the issues of solvency and risk in retirement systems, comparisons of defined benefit and defined contribution pension plans, and possible reforms to those systems in light

of perennial underfunding in defined benefit plans. My curriculum vitae is attached as Exhibit 1.

Exhibit 1. *Expert CV – See Attached*

5. The materials considered in the preparation of this report are listed in Exhibit 2.

Exhibit 2. *Materials Considered – See Attached*

6. My billing rate is \$725 per hour for my services in this matter, and I was assisted by NERA Economic Consulting. My compensation is not contingent upon the nature of my findings or on the outcome of this matter.

II. Assignment

7. I have been retained by counsel for the Movants¹ in connection with the Motion of Certain Secured Creditors of the Employees Retirement System of the Government of the Commonwealth of Puerto Rico for Relief from the Automatic Stay, Docket No. 3418 in Case No. 17-bk-03283 and Docket No. 289 in Case No. 17-bk-03566 (the “Motion”), to provide expert testimony at the hearing on the Motion. Counsel for the Movants asked me to (1) evaluate the current and historic structure and funding status of the Employees Retirement System of the Government of the Commonwealth of Puerto Rico (“ERS”), (2) evaluate the structure and funding status of the Pay-As-You-Go or “PayGo” system that was instituted in mid-2017, and (3) compare the economic functioning of the pre-June 2017 ERS with the PayGo system, including the relationship between ERS employer contributions and PayGo fees.

¹ The Movants are Andalusian Global Designated Activity Company, Glendon Opportunities Fund, L.P., Mason Capital Master Fund, LP, Oaktree Opportunities Fund IX, L.P., Oaktree Opportunities Fund IX (Parallel 2), L.P., Ocher Rose, L.L.C., and SV Credit, L.P.

III. Summary of Findings and Opinions

8. My findings and opinions can be summarized as follows:

- a. Before 2017, ERS combined three separate pension plans: two defined benefit plans (under Act 447-1951 and Act 1-1990) and the System 2000 hybrid cash-balance plan established by Act 305-1999. ERS was funded by a combination of employer contributions from the Commonwealth, municipalities, and public corporations; employee contributions from covered employees; and earnings on ERS's investments.
- b. For many years before 2017, ERS was not actuarially sound. Rather, the level of contributions paid by employers was insufficient to cover the current benefits that were being paid to beneficiaries, much less fund ERS's accrued liabilities. To cover the shortfall in cash flow, ERS used employee contributions under System 2000 to pay benefits and, later, depleted its cash reserves and investments. Although the Puerto Rico Legislature amended the ERS Enabling Act in hopes of increasing the system's soundness and liquidity, the various amendments did not adequately address this problem.
- c. By the beginning of the 2017 calendar year, ERS's investments were nearly depleted, and it was projected that its investments would be totally depleted in the near future. Under the governing statutes, employers were required to make contributions sufficient to meet ERS's actuarially determined needs. Once ERS had depleted its investments, paying benefits to which Members were entitled would have required increasing employer contributions to levels sufficient to operate ERS as a Pay-As-You-Go system.

- d. Conceptually, a change from a funded defined benefit system to a Pay-As-You-Go defined benefit system is a change only in the timing of contributions made by the sponsors of that system to support benefit payments. By itself, it is not a change in the claims that participants and other creditors have on that system. The change to PayGo did not improve or alter benefit payments or the cost of paying accrued pension benefits.
- e. In economic terms, the PayGo system reflects only inconsequential changes from the pre-2017 ERS pension system. The benefits paid are the same benefits that were accrued under ERS. The PayGo fees that fund those benefits come from the same employers who previously paid employer contributions to ERS, and they are paid in amounts that reflect amounts required to fund the pension benefits accrued under ERS, amounts for which the employers were already liable. The changes in how the PayGo fees on employers are calculated are ones that could have been made to required employer contributions within ERS, and they do not represent a substantial change in the nature of the payments.

IV. Background on ERS

- 9. Before 2017, the Employees Retirement System of the Government of the Commonwealth of Puerto Rico (the “ERS” or the “System”) combined three separate pension plans: two defined benefit plans (under Act 447-1951 and Act 1-1990) and the System 2000 hybrid cash-balance plan established by Act 305-1999.²

- a. ERS was created by Act No. 447 of May 15, 1951 (“Act 447-1951”) to provide pension and other benefits to retired employees of the Commonwealth and certain of

² Dr. Faten Sabry’s report of May 30, 2019 provides a more detailed discussion of the history and legal structure of ERS, including changes to that system from its establishment in 1951 to the present day. I have not repeated all of that background here, but I have considered it in reaching the opinions in this report.

its municipalities and public corporations. As of June 2018, ERS had 233,048 members, including 119,048 retirees, disabled members, and beneficiaries, and 114,000 active employees.³

- b. Members who enrolled before April 1, 1990 have benefits determined by Act 447-1951, as amended. Members who entered after April 1, 1990 and before December 31, 1999 have benefits determined by Act 1 of February 16, 1990, as amended (“Act 1-1990”). Both Act 447 Members and Act 1 Members are entitled to benefits based on a defined benefit pension plan, with the latter plan less generous than the former.
- c. Members who entered the System on or after January 1, 2000 have a hybrid cash-balance plan governed by Act 305 of September 24, 1999, as amended (“Act 305-1999”).
- d. The Commonwealth’s Act 3 of April 4, 2013 (“Act 3-2013”) transferred all active Act 447 and Act 1 Members to a hybrid plan and froze their benefit accruals under their prior defined benefit plans.

10. ERS was funded by a combination of employer contributions from the Commonwealth, municipalities, and public corporations; employee contributions from covered employees; and earnings on ERS’s investments.

- a. In Fiscal Year 2015-2016, the last year for which audited numbers on employer contributions under ERS are available, the Central Government contributed \$484 million, Public Corporations contributed \$172 million, and Municipalities contributed \$123 million.⁴

³ Employees Retirement System of the Government of the Commonwealth of Puerto Rico Annual Financial Information, Fiscal Year 2018, page 2.

⁴ Employees Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2016 and 2015, pages 3 – 5.

- b. The top panel of Exhibit 3 shows the breakdown of the total additions to the ERS fiduciary net position for the years ending June 30, 2007 and 2016. In 2007, employee contributions were \$339 million, employer contributions (including those for early retirement programs and appropriations for special laws) were \$460.5 million, and net investment income was \$454 million. Total additions to the fiduciary net position were \$1,253 million. In 2016, the respective amounts were \$334 million from employees, \$779 million from employers, and \$90 million from investments, for total additions of \$1,204 million.

V. Solvency of ERS

11. For many years before 2017, ERS was not actuarially sound. Rather, the level of contributions paid by employers was insufficient to cover the current benefits that were being paid to beneficiaries, much less fund ERS's accrued liabilities.

- a. Since 1990, the ERS funding ratio of the actuarial valuation of its assets to the total pension liability never exceeded 25%, peaking at 24.6% in 2001, and turned negative in 2015.⁵
- b. The bottom panel of Exhibit 3 shows the breakdown of the total deductions to the ERS fiduciary net position for the years ending June 30, 2007 and 2016. In 2007, total deductions were \$903 million, with Member benefits comprising \$832 million. In 2016, total deductions were \$1,801 million, including Member benefits of \$1,533 million.

⁵ See Financial Statements and Actuarial Valuation Reports of the Employees Retirement System of the Government of the Commonwealth of Puerto Rico since 1990.

- c. In 2007, investment income of \$454 million was sufficient to generate a positive change in the Market Value of Assets of \$350 million. In 2016, investment income was only \$90 million, and the Market Value of Assets decreased by \$598 million. The 2007 experience was unusual. Since 2008, total additions have exceeded total deductions in only one year, 2011, in which investment income was also relatively high.⁶
- d. If ERS were to operate as a funded defined benefit plan, then employers would be required to contribute an amount each year that reflects not only the incremental cost of Member benefits accrued during the year, but also the amortization of the unfunded actuarial liability pertaining to Member benefits accrued but not funded in prior years. Exhibit 4 shows the actual employer contributions, the annual required contributions, and their ratio over the years from 1999 to 2014.⁷ Over this period, the maximum percentage of the required contribution that employers actually made was 69%. For each of the last 5 years of the period, the ratio was 40% or lower.

12. To cover the shortfall in cash flow, ERS used employee contributions under System 2000 to pay benefits and, later, depleted its cash reserves and investments.

- a. Prior to Act 305-1999, which established the System 2000 hybrid cash-balance plan, employee contributions to ERS were available to pay current benefits and expenses.
- b. For a hybrid cash-balance plan to operate in a financially sound manner, the employee contributions should have been segregated from all other System funds and used to prefund the employees' future benefits. Payments to the current beneficiaries

⁶ See Actuarial Valuation Reports of the Employees Retirement System of the Government of the Commonwealth of Puerto Rico, 2008 - 2017.

⁷ These calculations were reported pursuant to Governmental Accounting Standards Board Statements 25 and 27, which were superceded by GASB Statements 67 and 68 after 2014. The data underlying Exhibit 4 are drawn from the Puerto Rico Government Employees Retirement System Actuarial Valuation Reports from 2005 – 2014.

in ERS would be funded only through other sources like employer contributions and employee contributions from Act 447 and Act 1 Members.

- c. However, as noted in the Financial Oversight and Management Board's Explanatory Memorandum on Pension Reform, "More recently, instead of depositing employee contributions to System 2000 accounts to fund future benefits, the plans have diverted employee contributions to pay benefits for current retirees."⁸ Despite the diversion of these funds, the System's net fiduciary position turned negative as of the June 30, 2015 actuarial valuation.⁹

13. Although the Puerto Rico Legislature amended the ERS Enabling Act in hopes of increasing the system's soundness and liquidity, the various amendments did not adequately address this problem.

- a. The Commonwealth's Act 116 of July 6, 2011 ("Act 116-2011") scheduled a series of increases in the employer contribution rate, from 9.275% to 10.275% effective July 1, 2011, followed in successive years by 4 additional 1 percentage point increases and 5 increases of 1.25 percentage points, reaching an ultimate employer contribution rate of 20.525% by July 1, 2020.¹⁰
- b. In addition to the changes noted above, Act 3-2013 increased the retirement age for Act 447 members, System 2000 members, and most new entrants to the System. It also increased the employee contribution rate from 8.275% to 10%.¹¹

⁸ Financial Oversight and Management Board Explanatory Memorandum on Pension Reform, August 4, 2017, page 5.

⁹ Puerto Rico Government Employees Retirement System, June 30, 2015 Actuarial Valuation Report, page 1.

¹⁰ Puerto Rico Government Employees Retirement System, June 30, 2015 Actuarial Valuation Report, page 4.

¹¹ Act 3-2013, page 20.

- c. The Commonwealth's Act 32 of June 25, 2013 ("Act 32-2013"), as amended by Act 244 of February 18, 2014 ("Act 244-2014") legislated two decades of Additional Uniform Contributions ("AUC") each fiscal year to make up for the System's cash flow deficits. Each employer's AUC in a given fiscal year would be based on the percentage of the total employer contributions corresponding to that employer. Payments of the AUC were meant to keep the projected gross assets of the System from falling below \$1 billion in any subsequent fiscal year.¹²

VI. ERS Approaching 2017

14. By the beginning of the 2017 calendar year, ERS's investments were nearly depleted, and it was projected that its investments would be totally depleted in the near future. Under the governing statutes, employers were required to make contributions sufficient to meet ERS's actuarially determined needs. For example, Section 2-116 of Act 447-1951, as amended, stipulates that any difference between the minimum employer contribution rate (e.g. 9.275% as of April 1, 1990) and the rate required to cover the total costs of the System "shall constitute a deficiency in the employer contribution." The Act further states that, "The obligation accrued as a result of this deficiency shall constitute an actuarial deficit for the System and an obligation of the employer."¹³
15. The 2015 Actuarial Valuation Report, transmitted August 31, 2016 contains the following warning, highlighted at the end of its Section I – Summary: "PRGERS net assets have been exhausted in the 2014-2015 fiscal year. If the increasing Law 116 employer contributions, the Supplemental Contribution under Act 3, and the Additional Uniform Contribution under Act 32 (as amended by Act 244) are not paid in full on an annual basis, PRGERS will continue being rapidly disfunded and gross assets will be exhausted."¹⁴

¹² Act 32-2013, pages 6-7.

¹³ Act 447-1951, as amended, page 31.

¹⁴ Puerto Rico Government Employees Retirement System, June 30, 2015 Actuarial Valuation Report, page 11.

16. Once ERS had depleted its investments, paying benefits to which Members were entitled would have required increasing employer contributions to levels sufficient to operate ERS as a Pay-As-You-Go system.

a. As noted above and shown in Exhibit 3, in Fiscal Year 2016, total contributions of \$1,114 million were less than the \$1,533 million of benefits paid.

b. Exhibit 4 shows that over the seven fiscal years from 2008 – 2014 (the latest for which Actuarial Valuation Report makes this comparison), actual employer contributions were between 29 – 56% of the annual required contributions.

c. This pattern of contributing less than what the law stipulates, and in some cases less than even current benefits, implies that moving to a Pay-As-You-Go system would actually increase employer contributions in some years.

VII. The Change to PayGo in Summer 2017

17. On August 23, 2017, the Commonwealth enacted Act No. 106 of 2017 (“Act 106-2017”), which established a “New Defined Contribution Plan” for all active employees as of July 1, 2017. Employees who begin working after that date will not be ERS Members.¹⁵ Their employee contributions will accumulate in individual accounts, similar to a 401(k) plan, with retirement benefits later payable solely from the contributions and investment earnings in those accounts. Act 106 also formally eliminated employer contributions to the System and instituted a PayGo fee “equal to the amount actually paid to Pensioners and Beneficiaries” attributable to each employer.¹⁶

¹⁵ Act 106-2017, pages 22-24.

¹⁶ Act 106-2017, page 17.

18. Conceptually, a change from a funded defined benefit system under ERS to a Pay-As-You-Go defined benefit system introduced by Act 106 is a change only in the timing of contributions to the System to support benefit payments.
19. Under a Pay-As-You-Go system, the System is obliged to pay an amount in a given year that matches the expenses incurred directly that year. Such expenses include payments to beneficiaries, administrative costs, and debt service on bonds.¹⁷ The unfunded accrued liability is reduced over time due to these payments and eventually reaches zero as beneficiaries pass away. Bondholders receive their interest and principal payments in the years they are owed.
20. In contrast, the size of the annual required contribution in a funded system is determined by the incremental cost of Member benefits accrued during the year and the amortization of the unfunded actuarial liability pertaining to Member benefits accrued but not funded in prior years. With ERS presently closed to new Members, benefit accruals frozen for existing Members, and net plan assets at zero, the annual required contributions by employers would reflect only the amortization of the unfunded accrued liability for that year.¹⁸ These contributions are sufficient to fund the interest and principal payments to bondholders because the value of bonds payable is incorporated as a liability in the calculation of the plan's unfunded accrued liability.
21. Thus, by itself, a change to a Pay-As-You-Go system is not a change in the claims that Members and other creditors have on the System. The change to PayGo did not improve or

¹⁷ Puerto Rico Employees Retirement System June 30, 2017 Actuarial Valuation Report, page 9.

¹⁸ The System adopted an amortization period of 30 years in the development of the Fiscal Year 2007-2008 Annual Required Contribution. See, for example, Puerto Rico Employees Retirement System June 30, 2007 Actuarial Valuation Report, page 23.

alter benefit payments or the cost of paying accrued pension benefits.¹⁹ The change to PayGo changed only the timing of contributions to fund those benefits. Under a funded defined benefit plan, benefit accruals are funded immediately, and any underfunding is amortized gradually over time. Under a Pay-As-You-Go system, contributions are deferred until benefit payments are due. There is no prefunding and no amortization.

VIII. The Equivalence of ERS and PayGo

22. In economic terms, the PayGo system reflects only inconsequential changes from the pre-2017 ERS pension system. The benefits paid under the PayGo system are the same benefits that were accrued under ERS. The PayGo fees that fund those benefits come from the same employers who previously paid employer contributions to ERS, and they are paid in amounts that reflect amounts required to fund the pension benefits accrued under ERS, amounts for which the employers were already liable.

23. Act 106-2017 established the Pay-Go Fee as follows: “The foregoing notwithstanding, the Municipalities, Legislative Branch, Public Corporations, the Government and the Court Administration shall be required to pay the ‘Pay-Go’ Fee, according to each one to support the Accumulated Pensions Payment Account.”²⁰ Key terms are subsequently defined as follows:

- a. The *Pay-Go Fee* is defined in Act 106-2017 as “a fee to be established and imposed by the AAFAF [the Puerto Rico Fiscal Agency and Financial Advisory Authority created by Law 2-2017] and paid by the Government, the Municipalities, Judicial Branch, Legislative Branch and the Public Corporations, and other entities considered

¹⁹ The change to PayGo also does not necessarily lower the cost of administering the System. For example, Exhibit 3 reports administrative expenses of \$28 million in 2016. The Financial Model for Puerto Rico’s New Fiscal Plan of October 23, 2018, assumes administrative expenses of \$55 million in fiscal year 2018, growing at 2.5% per year.

²⁰ Act 106-2017, Section 1.4, pages 13 - 14.

- employers under the Puerto Rican Government Employee Retirement System and the Teachers Retirement System, in accordance with Chapter 2 of this Law. The fee shall be collected by the Secretary of the Treasury or his or her appointee, as set forth herein.”²¹ Thus, an entity is obliged to pay the Pay-Go Fee if it was an employer under ERS.
- b. The *Accumulated Pensions Payment Account* is defined in Act 106-2017 as an “account in trust, separate from general assets and Government accounts, designed to pay the Accumulated Pensions for the Puerto Rican Government Employee Retirement System, the Teacher Retirement System and Judiciary Retirement Systems under a ‘pay as you go’ system as set forth in Chapter 2 of this Law. The account in trust will be centralized and segregated from general assets and Government accounts by the Treasury Department and dedicated solely and exclusively to the purposes set forth herein, and subject to the terms and conditions set out herein.”²²
- c. The *Accumulated Pensions* are defined in Act 106-2017 as an “annuity, benefit or defined benefit to which Participants will be entitled upon retiring from service based on the contributions and rules applicable to their respective Retirement Systems, calculated as of the moment this Act takes effect.”²³
- d. Thus, the Accumulated Pensions Payment Account is explicitly defined to connect the amount of the Pay-Go Fee paid by an employer to the Participants in ERS for whom the employer would have been responsible for contributions under the prior System.

²¹ Act 106-2017, Section 1.6, page 15.

²² Act 106-2017, Section 1.6, page 15.

²³ Act 106-2017, Section 1.6, page 16.

24. The changes in how the PayGo fees on employers are calculated are ones that could have been made to required employer contributions within ERS, and they do not represent a substantial change in the nature of the payments.

- a. ERS was perennially underfunded due to employer contributions insufficient to cover the accrued actuarial liability in past years. Had ERS employer contribution rates been higher prior to Act 106-2017, then employers would have been charged a higher amount for each then-current employee, in accordance with that employee's benefit accrual while working.
- b. Because those benefit accruals were not adequately funded while the employees were working, they appear now as an unfunded accrued liability that must be serviced by the PayGo fee. The size of the PayGo fee on each employer corresponds to the ERS benefits attributable to the employer's former employees. Those benefits, in turn, are the accumulation of the prior benefit accruals that occurred while the employees were working. Thus, the PayGo fees and the ERS employer contributions both originate from the same source – the entitlement earned by public-sector employees while working under ERS prior to Act 106-2017.

IX. Miscellaneous

25. My work is ongoing and my opinions are subject to revision based on new information (including documentation, reports or testimony by other experts), which subsequently may be provided to, or obtained by, me.


By: 
Andrew A. Samwick

Exhibit 1

ANDREW A. SAMWICK

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CURRENT AND PAST ACADEMIC POSITIONS

Director, The Nelson A. Rockefeller Center at Dartmouth College, July 2004 – present.

Sandra L. and Arthur L. Irving '72a, P'10 Professor of Economics, Dartmouth College, 2010 – present. (Professor, 2001 – 2010. Associate Professor, 2000 – 2001. Assistant Professor, 1994 – 2000).

Visiting Assistant Professor of Finance and Economics, Columbia University Graduate School of Business, Fall 1998.

OTHER PROFESSIONAL POSITIONS

Member, Census Scientific Advisory Committee, Washington, DC, Summer 2015 – present.

Research Associate, National Bureau of Economic Research, April 2000 – present. (Faculty Research Fellow, 1994 – 2000).

Board of Directors, National Tax Association, November 2012 – November 2015.

Co-chair of the Social Security Working Group, National Bureau of Economic Research, December 1999 – December 2013.

Chief Economist, Staff of the President's Council of Economic Advisers, Washington, DC, July 2003 – June 2004.

EDUCATION

Ph.D., Economics, Massachusetts Institute of Technology, 1993
National Institute on Aging, Pre-doctoral Training Grant, 1992 -1993
Lynde and Harry Bradley Foundation Fellowship, 1992 - 1993
National Science Foundation Graduate Fellowship, 1989 - 1992

A.B., Summa cum laude, Economics, Harvard College, 1989
Phi Beta Kappa, October 1988

PRIZES AND AWARDS

Dartmouth Class of 1964 Outstanding Leadership Award, May 2019

Duke TIP Distinguished Alumnus Award, May 2016.

New Hampshire Professor of the Year, selected by the Carnegie Foundation for the Advancement of Teaching and the Council for the Advancement and Support of Education (CASE), November 2009.

The Karen E. Wetterhahn Award for Distinguished Creative or Scholarly Achievement, Dartmouth College, May 2000

FELLOWSHIPS

TIAA-CREF Institute Fellow, 2005 – present.

National Bureau of Economic Research National Fellow, 2001 – 2002

C. Troy Shaver 1969 Fellow, Dartmouth College, 2001 – 2002

Elizabeth R. and Robert A. Jeffe Fellow, Dartmouth College, 2000 – 2001

Faculty Fellowship, Dartmouth College, 1997 – 1998

Aging and Health Care Economics Fellow, NBER, 1993 – 1994

PUBLICATIONS

“Means-Testing Federal Health Entitlement Benefits.” in Robert A. Moffitt (ed.) *Tax Policy and the Economy* 32 (2018), Chicago: University of Chicago Press, 173 – 210.

“The Welfare Cost of Perceived Policy Uncertainty: Evidence from Social Security.” *American Economic Review*, 108 (February 2018), 275 – 307. (with Erzo Luttmer)

“Effects of Income Tax Changes on Economic Growth,” in Alan J. Auerbach and Kent Smetters (eds.) *The Economics of Tax Policy*. Oxford: Oxford University Press, 2017, 13 – 39. (with William G. Gale)

“Donating the Voucher: An Alternative Tax Treatment of Private School Enrollment,” in Jeffrey Brown (ed.) *Tax Policy and the Economy* 27 (2013), Chicago: University of Chicago Press, 125 – 160.

“Policy Forum: A Decade of Reckoning – Fiscal Policy Challenges in the United States,” *Canadian Tax Journal* 61:2 (2013), 413-424.

“The Design of Retirement Saving Programs in the Presence of Competing Consumption Needs,” *National Tax Association Proceedings – 2010*, 71 – 80.

“Moral Hazard in the Policy Response to the 2008 Financial Market Meltdown.” *Cato Journal* 29 (Winter 2009), 131-139.

“Changing Progressivity as a Means of Risk Protection in Investment-Based Social Security Reform,” in Jeffrey R. Brown, Jeffrey Liebman, and David A. Wise (eds.) *Social Security Policy in a Changing Environment*. Chicago: University of Chicago Press, 2009, 299-327.

“Disability Risk and the Value of Disability Insurance.” in David M. Cutler and David A. Wise (eds.) *Health at Older Ages: The Causes and Consequences of Declining Disability Among the Elderly*. Chicago: University of Chicago Press, 2008, 295 – 336. (with Amitabh Chandra)

“Empire-Builders and Shirkers: Investment, Firm-Performance, and Managerial Incentives.” *Journal of Corporate Finance* 12 (June 2006), 489-515 (with Rajesh Aggarwal).

“Saving for Retirement: Understanding the Importance of Heterogeneity,” *Business Economics* 41 (January 2006), 21-27.

“The Effects of Social Security Reform on Private Pensions.” in William G. Gale, John B. Shoven, and Mark J. Warshawsky (eds.) *Private Pensions and Public Policies*. Washington: Brookings Institution Press, 2004, 189-213.

“Social Security Reform: The United States in 2002.” in Einar Overbye and Peter A. Kemp (eds.) *Pensions: Challenges and Reform*. Aldershot: Ashgate Publishing Limited, 2004, 53-69.

“How Will 401(k) Plans Affect Retirement Income?” *American Economic Review* 94 (March 2004), 329 – 343 (with Jonathan Skinner).

“Option Value Estimation with HRS Data.” in Seiritsu Ogura, Toshiaki Tachibanaki, and David A. Wise (eds.) *Labor Markets and Firm Benefit Policies in Japan and the United States*. Chicago: University of Chicago Press, 2003, 205-228 (with David Wise).

“Performance Incentives Within Firms: The Effect of Managerial Responsibility.” *Journal of Finance* 58 (August 2003), 1613-1649 (with Rajesh Aggarwal).

“Why Do Managers Diversify Their Firms? Agency Reconsidered.” *Journal of Finance* 58 (February 2003), 71-118 (with Rajesh Aggarwal).

“Taxation and Household Portfolio Composition: U.S. Evidence from the 1980s and 1990s.” *Journal of Public Economics* 87 (January 2003), 5-38. (with James Poterba)

“Potential Paths of Social Security Reform,” in James M. Poterba (ed.) *Tax Policy and the Economy*, 16 (2002). Cambridge: MIT Press, 181-224 (with Martin Feldstein).

“Portfolio Allocations Over the Life Cycle,” in Seiritsu Ogura, Toshiaki Tachibanaki, and A. David Wise (eds.) *Aging Issues in the United States and Japan*. Chicago: University of Chicago Press, 2001, 65-103 (with James Poterba).

“The Transition to Investment-based Social Security when Portfolio Returns and Capital Profitability Are Uncertain,” in John Y. Campbell and Martin S. Feldstein (eds.) *Risk Aspects of Investment Based Social Security Reform*. Chicago: University of Chicago Press, 2001, 41-87 (with Martin Feldstein and Elena Rangelova).

“Evaluating Pension Entitlements.” in P. Brett Hammond, Olivia Mitchell, and Anna Rappaport (eds.) *Forecasting Retirement Needs and Retirement Wealth*. Philadelphia: University of Pennsylvania Press, 2000, 309-326 (with Alan Gustman, Olivia Mitchell, and Thomas Steinmeier).

“Portfolio Responses to Taxation: Evidence from the End of the Rainbow.” in Joel Slemrod (ed.) *Does Atlas Shrug? The Economic Consequences of Taxing the Rich*. Cambridge: Harvard University Press, 2000, 289-323.

“Allocating Payroll Tax Revenue to Personal Retirement Accounts.” *Tax Notes* (June 19, 2000), 1645-1652 (with Martin Feldstein).

“Is Pension Reform Conducive to Higher Saving?” *Review of Economics and Statistics*, 82 (May 2000), 264-272.

“Pension and Social Security Wealth in the Health and Retirement Study.” in Robert Willis and James Smith (eds.) *Wealth, Work, and Health: Innovations in Measurement in the Social Sciences*. Ann Arbor: University of Michigan Press, 1999, 150-208. (with Alan Gustman, Olivia Mitchell, and Thomas Steinmeier)

“Tax Arbitrage.” in Joseph J. Cordes, Robert D. Ebel, and Jane G. Gravelle (eds.) *Encyclopedia of Taxation and Tax Policy*. Washington: Urban Institute Press, 1999, 365-367.

“Executive Compensation, Strategic Competition, and Relative Performance Evaluation: Theory and Evidence.” *Journal of Finance* 54 (December 1999), 1999-2043. (with Rajesh Aggarwal)

“Social Security Reform in the United States.” *National Tax Journal*, 52 (December 1999), 819 – 842.

“The Other Side of the Tradeoff: The Impact of Risk on Executive Compensation.” *Journal of Political Economy* 107 (February 1999), 65-105 (with Rajesh Aggarwal).

“The Transition Path in Privatizing Social Security.” in Martin Feldstein (ed.) *Privatizing Social Security*. Chicago: University of Chicago Press, 1998, 215-260 (with Martin Feldstein).

“New Evidence on Pensions, Social Security, and the Timing of Retirement.” *Journal of Public Economics* 70 (November 1998), 207-236.

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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- ERS-AAFAF_LS0000057 - 0000059.
- ERS-AAFAF_LS0000060 - 0000062.
- ERS-AAFAF_LS0000063 - 0000078.
- ERS-AAFAF_LS0000079 - 0000080.
- ERS-AAFAF_LS0000081 - 0000083.
- ERS-AAFAF_LS0000083.
- ERS-AAFAF_LS0000084.
- ERS-AAFAF_LS0000085 - 0000156.
- ERS-AAFAF_LS0000157 - 0000220.
- ERS-AAFAF_LS0000221 - 0000262.
- ERS-AAFAF_LS0000263 - 0000339.
- ERS-AAFAF_LS0000340.
- ERS-AAFAF_LS0000341.
- ERS-AAFAF_LS0000342.
- ERS-AAFAF_LS0000343 - 0000475.
- ERS-AAFAF_LS0000476 - 0000775.
- ERS-AAFAF_LS0000776 - 0001138.
- ERS-AAFAF_LS0001139.
- ERS-AAFAF_LS0001140 - 0001146.
- ERS-AAFAF_LS0001147.

Exhibit 2. Materials Considered

- ERS-AAFAF_LS0001148 - 0001277.
- ERS-AAFAF_LS0001278.
- ERS-AAFAF_LS0001279.
- ERS-AAFAF_LS0001280.
- ERS-AAFAF_LS0001281.
- ERS-AAFAF_LS0001284.
- ERS-AAFAF_LS0001308 - 0001309.
- ERS-AAFAF_LS0001310 - 0001311.
- ERS-AAFAF_LS0001312 - 0001315.
- ERS-AAFAF_LS0001316 - 0001319.
- ERS-AAFAF_LS0001320.
- ERS-AAFAF_LS0001321 - 0001326.
- ERS-AAFAF_LS0001327 - 0001332.
- ERS-AAFAF_LS0001333 - 0001375.
- ERS-AAFAF_LS0001376 - 0001420.
- ERS-AAFAF_LS0001421 - 0001464.
- ERS-AAFAF_LS0001465 - 0001505.
- ERS-AAFAF_LS0001506 - 0001507.
- ERS-AAFAF_LS0001508 - 0001513.
- ERS-AAFAF_LS0001514 - 0001519.
- ERS-AAFAF_LS0001520 - 0001521.
- ERS-AAFAF_LS0001522.
- ERS-AAFAF_LS0001523 - 0001524.
- ERS-AAFAF_LS0001525 - 0001526.
- ERS-AAFAF_LS0001527 - 0001528.
- ERS-AAFAF_LS0001529 - 0001530.
- ERS-AAFAF_LS0001531.
- ERS-AAFAF_LS0001532.
- ERS-AAFAF_LS0001533.
- ERS-AAFAF_LS0001534 - 0001535.
- ERS-AAFAF_LS0001536 - 0001538.
- ERS-AAFAF_LS0001539 - 0001541.
- ERS-AAFAF_LS0001542 - 0001543.
- ERS-AAFAF_LS0001544 - 0001546.
- ERS-AAFAF_LS0001547.
- ERS-AAFAF_LS0001548 - 0001549.
- ERS-AAFAF_LS0001550 - 0001551.
- ERS-AAFAF_LS0001552.
- ERS-AAFAF_LS0001553 - 0001554.
- ERS-AAFAF_LS0001555 - 0001557.
- ERS-AAFAF_LS0001558 - 0001566.
- ERS-AAFAF_LS0001567 - 0001575.
- ERS-AAFAF_LS0001576 - 0001577.
- ERS-AAFAF_LS0001578 - 0001579.
- ERS-AAFAF_LS0001580 - 0001588.
- ERS-AAFAF_LS0001589 - 0001592.
- ERS-AAFAF_LS0001593 - 0001624.
- ERS-AAFAF_LS0001625 - 0001656.
- ERS-AAFAF_LS0001657 - 0001686.
- ERS-AAFAF_LS0001687 - 0001693.
- ERS-AAFAF_LS0001694 - 0001697.
- ERS-AAFAF_LS0001698 - 0001700.
- ERS-AAFAF_LS0001701.
- ERS-AAFAF_LS0001702.
- ERS-AAFAF_LS0001703.
- ERS-AAFAF_LS0001704.
- ERS-AAFAF_LS0001705 - 0001706.

Exhibit 2. Materials Considered

- ERS-AAFAF_LS0001707 - 0001790.
- ERS-AAFAF_LS0001791 - 0001871.
- ERS-AAFAF_LS0001872 - 0001952.
- ERS-AAFAF_LS0001953 - 0001984.
- ERS-AAFAF_LS0001985 - 0001987.
- ERS-AAFAF_LS0001988.
- ERS-AAFAF_LS0001989 - 0001991.
- ERS-AAFAF_LS0001992 - 0001994.
- ERS-AAFAF_LS0001995 - 0001996.
- ERS-AFAF_LS0001147.
- ERS-CW_LS0000001.
- ERS-CW_LS0000002.
- ERS-CW_LS0000003.
- ERS-CW_LS0000004 - 000025.
- ERS-CW_LS0000026 - 000028.
- ERS-CW_LS0000029 - 000031.
- ERS-CW_LS0000032 - 000037.
- ERS-CW_LS0000038 - 000047.
- ERS-CW_LS0000048 - 000055.
- ERS-CW_LS0000056 - 000064.
- ERS-CW_LS0000065 - 000071.
- ERS-CW_LS0000072.
- ERS-CW_LS0000073 - 000076.
- ERS-CW_LS0000077 - 0000125.
- ERS-CW_LS0000126 - 0000183.
- ERS-CW_LS0000184 - 0000187.
- ERS-CW_LS0000188.
- ERS-CW_LS0000189.
- ERS-CW_LS0000190 - 0000231.
- ERS-CW_LS0000232 - 0000242.
- ERS-CW_LS0000243 - 0000251.
- ERS-CW_LS0000252 - 0000259.
- ERS-CW_LS0000260 - 0000265.
- ERS-CW_LS0000266 - 0000269.
- ERS-CW_LS0000270 - 0000278.
- ERS-CW_LS0000279.
- ERS-CW_LS0000280 - 0000289.
- ERS-CW_LS0000290 - 0000293.
- ERS-CW_LS0000294 - 0000295.
- ERS-CW_LS0000296.
- ERS-CW_LS0000297 - 0000299.
- ERS-CW_LS0000300.
- ERS-CW_LS0000301 - 0000303.
- ERS-CW_LS0000304.
- ERS-CW_LS0000305 - 0000308.
- ERS-CW_LS0000309 - 0000313.
- ERS-CW_LS0000314 - 0000316.
- ERS-CW_LS0000317 - 0000320.
- ERS-CW_LS0000321.
- ERS-CW_LS0000322.
- ERS-CW_LS0000323.
- ERS-CW_LS0000324.
- ERS-CW_LS0000325.
- ERS-CW_LS0000326.
- ERS-CW_LS0000327.
- ERS-CW_LS0000328 - 0000330.
- ERS-CW_LS0000331 - 0000332.

Exhibit 2. Materials Considered

- ERS-CW_LS0000333.
- ERS-CW_LS0000334 - 0000338.
- ERS-CW_LS0000339 - 0000340.
- ERS-CW_LS0000341 - 0000343.
- ERS-CW_LS0000344 - 0000345.
- ERS-CW_LS0000346 - 0000349.
- ERS-CW_LS0000350 - 0000353.
- ERS-CW_LS0000354 - 0000357.
- ERS-CW_LS0000358.
- ERS-CW_LS0000359 - 0000368.
- ERS-CW_LS0000369 - 0000375.
- ERS-CW_LS0000376 - 0000378.
- ERS-CW_LS0000379 - 0000383.
- ERS-CW_LS0000384.
- ERS-CW_LS0000385.
- ERS-CW_LS0000386 - 0000387.
- ERS-CW_LS0000388 - 0000392.
- ERS-CW_LS0000393.
- ERS-CW_LS0000394 - 0000395.
- ERS-CW_LS0000396.
- ERS-CW_LS0000397.
- ERS-CW_LS0000398.
- ERS-CW_LS0000399 - 0000419.
- ERS-CW_LS0000420 - 0000428.
- ERS-CW_LS0000429 - 0000433.
- ERS-CW_LS0000434 - 0000437.
- ERS-CW_LS0000438 - 0000440.
- ERS-CW_LS0000441 - 0000444.
- ERS-CW_LS0000445 - 0000448.
- ERS-CW_LS0000449.
- FOMB_ERS_00000001.
- FOMB_ERS_00000002 - 00000047.
- FOMB_ERS_00000048.
- FOMB_ERS_00000049 - 00000094.
- FOMB_ERS_00000095.
- FOMB_ERS_00000096 - 00000141.
- FOMB_ERS_00000142.
- FOMB_ERS_00000143 - 00000188.
- FOMB_ERS_00000189 - 00000190.
- FOMB_ERS_00000191 - 00000236.
- FOMB_ERS_00000237 - 00000238.
- FOMB_ERS_00000239.
- FOMB_ERS_00000285.
- FOMB_ERS_00000286 - 00000458.
- FOMB_ERS_00000459 - 00000460.
- FOMB_ERS_00000461 - 00000558.
- FOMB_ERS_00000559.
- FOMB_ERS_00000560 - 00000628.
- FOMB_ERS_00000629.
- FOMB_ERS_00000630 - 00000645.
- FOMB_ERS_00000646.
- FOMB_ERS_00000647 - 00000654.
- FOMB_ERS_00000655.
- FOMB_ERS_00000656 - 00000712.
- FOMB_ERS_00000713.
- FOMB_ERS_00000714.
- FOMB_ERS_00000715 - 00000760.

Exhibit 2. Materials Considered

- FOMB_ERS_00000761.
- FOMB_ERS_00000762.
- FOMB_ERS_00000763 - 00000876.
- FOMB_ERS_00000877 - 00000899.
- FOMB_ERS_00000900 - 00000932.
- FOMB_ERS_00000933 - 00000949.
- FOMB_ERS_00000950 - 00000953.
- FOMB_ERS_00000954 - 00000999.
- FOMB_ERS_00001000.
- FOMB_ERS_00001001 - 00001003.
- FOMB_ERS_00001004.
- FOMB_ERS_00001005.
- FOMB_ERS_00001006.
- FOMB_ERS_00001007.
- FOMB_ERS_00001008.
- FOMB_ERS_00001009.
- FOMB_ERS_00001010.
- FOMB_ERS_00001011 - 00001015.
- FOMB_ERS_00001016 - 00001030.
- FOMB_ERS_00001031 - 00001084.
- FOMB_ERS_00001086 - 00001219.
- FOMB_ERS_00001220.
- FOMB_ERS_00001221.
- FOMB_ERS_00001222.
- FOMB_ERS_00001223 - 00001238.
- FOMB_ERS_00001239 - 00001263.
- FOMB_ERS_00001264 - 00001289.
- FOMB_ERS_00001290 - 00001315.
- FOMB_ERS_00001325.
- FOMB_ERS_00001326.
- FOMB_ERS_00001327.
- FOMB_ERS_00001328.
- FOMB_ERS_00001329.
- FOMB_ERS_00001330.
- FOMB_ERS_00001331.
- FOMB_ERS_00001332.
- FOMB_ERS_00001333.
- FOMB_ERS_00001334.
- FOMB_ERS_00001335.
- FOMB_ERS_00001336.
- FOMB_ERS_00001337 - 00001376.
- FOMB_ERS_00001377 - 00001415.
- FOMB_ERS_00001416.
- FOMB_ERS_00001417 - 00001432.
- FOMB_ERS_00001433 - 00001469.
- FOMB_ERS_00001470 - 00001506.
- FOMB_ERS_00001525.
- FOMB_ERS_00001526.
- FOMB_ERS_00001527.
- FOMB_ERS_00001528.
- FOMB_ERS_00001529.
- FOMB_ERS_00001530.
- FOMB_ERS_00001531.
- FOMB_ERS_00001532.
- FOMB_ERS_00001533.
- FOMB_ERS_00001534.
- FOMB_ERS_00001535.

Exhibit 2. Materials Considered

- FOMB_ERS_00001536.
- FOMB_ERS_00001537.
- FOMB_ERS_00001538.
- FOMB_ERS_00001539.
- FOMB_ERS_00001540.
- FOMB_ERS_00001541.
- FOMB_ERS_00001542.
- FOMB_ERS_00001543.
- FOMB_ERS_00001544.
- FOMB_ERS_00001545.
- FOMB_ERS_00001546 - 00001547.
- FOMB_ERS_00001548 - 00001585.
- FOMB_ERS_00001586 - 00001633.
- FOMB_ERS_00001634 - 00001682.
- FOMB_ERS_00001683 - 00001719.
- FOMB_ERS_00001720 - 00001722.
- FOMB_ERS_00001723 - 00001726.
- FOMB_ERS_00001727 - 00001735.
- FOMB_ERS_00001736.
- FOMB_ERS_00001737 - 00001752.
- FOMB_ERS_00001753 - 00001789.
- FOMB_ERS_00001790 - 00001826.
- FOMB_ERS_00001845.
- FOMB_ERS_00001846.
- FOMB_ERS_00001847.
- FOMB_ERS_00001848.
- FOMB_ERS_00001849.
- FOMB_ERS_00001850.
- FOMB_ERS_00001851.
- FOMB_ERS_00001852.
- FOMB_ERS_00001853.
- FOMB_ERS_00001854.
- FOMB_ERS_00001855.
- FOMB_ERS_00001856.
- FOMB_ERS_00001857.
- FOMB_ERS_00001858.
- FOMB_ERS_00001859.
- FOMB_ERS_00001860.
- FOMB_ERS_00001861.
- FOMB_ERS_00001862.
- FOMB_ERS_00001863.
- FOMB_ERS_00001864.
- FOMB_ERS_00001865.
- FOMB_ERS_00001866 - 00001902.
- FOMB_ERS_00001903 - 00001934.
- FOMB_ERS_00001935 - 00001938.
- FOMB_ERS_00001939 - 00001940.
- FOMB_ERS_00001941.
- FOMB_ERS_00001942 - 00001957.
- FOMB_ERS_00001958 - 00001994.
- FOMB_ERS_00001995 - 00002031.
- FOMB_ERS_00002050.
- FOMB_ERS_00002051.
- FOMB_ERS_00002052.
- FOMB_ERS_00002053.
- FOMB_ERS_00002054.
- FOMB_ERS_00002055.

Exhibit 2. Materials Considered

- FOMB_ERS_00002056.
- FOMB_ERS_00002057.
- FOMB_ERS_00002058.
- FOMB_ERS_00002059.
- FOMB_ERS_00002060.
- FOMB_ERS_00002061.
- FOMB_ERS_00002062.
- FOMB_ERS_00002063.
- FOMB_ERS_00002064.
- FOMB_ERS_00002065.
- FOMB_ERS_00002066.
- FOMB_ERS_00002068.
- FOMB_ERS_00002069.
- FOMB_ERS_00002070.
- FOMB_ERS_00002071 - 00002077.
- FOMB_ERS_00002078.
- FOMB_ERS_00002079.
- FOMB_ERS_00002080 - 00002084.
- FOMB_ERS_00002085.
- FOMB_ERS_00002086 - 00002143.
- FOMB_ERS_00002144 - 00002192.
- FOMB_ERS_00002193 - 00002196.
- FOMB_ERS_00002197 - 00002199.
- FOMB_ERS_00002200 - 00002202.
- FOMB_ERS_00002203 - 00002260.
- FOMB_ERS_00002261 - 00002309.
- FOMB_ERS_00002310 - 00002313.
- FOMB_ERS_00002314 - 00002316.
- FOMB_ERS_00002317 - 00002319.
- FOMB_ERS_00002320 - 00002321.
- FOMB_ERS_00002322 - 00002325.
- FOMB_ERS_00002326 - 00002450.
- FOMB_ERS_00002451 - 00002452.
- FOMB_ERS_00002453 - 00002455.
- FOMB_ERS_00002456 - 00002457.
- FOMB_ERS_00002458 - 00002472.
- FOMB_ERS_00002473 - 00002508.
- FOMB_ERS_00002509.
- FOMB_ERS_00002510.
- FOMB_ERS_00002511.
- FOMB_ERS_00002512.
- FOMB_ERS_00002513.
- FOMB_ERS_00002514.
- FOMB_ERS_00002515.
- FOMB_ERS_00002516.
- FOMB_ERS_00002517.
- FOMB_ERS_00002518.
- FOMB_ERS_00002519.
- FOMB_ERS_00002520.
- FOMB_ERS_00002521.
- FOMB_ERS_00002522.
- FOMB_ERS_00002523.
- FOMB_ERS_00002524.
- FOMB_ERS_00002525.
- FOMB_ERS_00002526.
- FOMB_ERS_00002527 - 00006463.
- FOMB_ERS_00006464.

Exhibit 2. Materials Considered

- FOMB_ERS_00006465.
- FOMB_ERS_00006466.
- FOMB_ERS_00006467.
- FOMB_ERS_00006468.
- FOMB_ERS_00006469.
- FOMB_ERS_00006470.
- FOMB_ERS_00006471.
- FOMB_ERS_00006472.
- FOMB_ERS_00006473.
- FOMB_ERS_00006474.
- FOMB_ERS_00006475.
- FOMB_ERS_00006476.
- FOMB_ERS_00006477.
- FOMB_ERS_00006478.
- FOMB_ERS_00006479 - 00006480.
- FOMB_ERS_00006481 - 00006495.
- FOMB_ERS_00006496 - 00006531.
- FOMB_ERS_00006532.
- FOMB_ERS_00006533.
- FOMB_ERS_00006534 - 00006549.
- FOMB_ERS_00006550 - 00006625.
- FOMB_ERS_00006626.
- FOMB_ERS_00006627 - 00006637.
- FOMB_ERS_00006638 - 00006693.
- FOMB_ERS_00006694.
- FOMB_ERS_00006695 - 00006704.
- FOMB_ERS_00006705 - 00006754.
- FOMB_ERS_00006755.
- FOMB_ERS_00006756.
- FOMB_ERS_00006757 - 00006795.
- FOMB_ERS_00006841.
- FOMB_ERS_00006842.
- FOMB_ERS_00006843.
- FOMB_ERS_00006844.
- FOMB_ERS_00006845.
- FOMB_ERS_00006846.
- FOMB_ERS_00006847.
- FOMB_ERS_00006848.
- FOMB_ERS_00006849.
- FOMB_ERS_00006850.
- FOMB_ERS_00006851.
- FOMB_ERS_00006852.
- FOMB_ERS_00006853 - 00006854.
- FOMB_ERS_00006855 - 00006862.
- FOMB_ERS_00006863 - 00006908.
- FOMB_ERS_00006909.
- FOMB_ERS_00006910 - 00006911.
- FOMB_ERS_00006912 - 00006952.
- FOMB_ERS_00006953.
- FOMB_ERS_00006954 - 00006968.
- FOMB_ERS_00006969 - 00006971.
- FOMB_ERS_00006972 - 00007012.
- FOMB_ERS_00007013.
- FOMB_ERS_00007014 - 00007028.
- FOMB_ERS_00007029.
- FOMB_ERS_00007030.
- FOMB_ERS_00007031 - 00007067.

Exhibit 2. Materials Considered

- FOMB_ERS_00007068 - 00007104.
- FOMB_ERS_00007123.
- FOMB_ERS_00007124.
- FOMB_ERS_00007125.
- FOMB_ERS_00007126.
- FOMB_ERS_00007127.
- FOMB_ERS_00007128.
- FOMB_ERS_00007129.
- FOMB_ERS_00007130.
- FOMB_ERS_00007131.
- FOMB_ERS_00007132.
- FOMB_ERS_00007133.
- FOMB_ERS_00007134.
- FOMB_ERS_00007135.
- FOMB_ERS_00007136.
- FOMB_ERS_00007137.
- FOMB_ERS_00007138.
- FOMB_ERS_00007139.
- FOMB_ERS_00007140.
- FOMB_ERS_00007141.
- FOMB_ERS_00007142.
- FOMB_ERS_00007143.
- FOMB_ERS_00007144.
- FOMB_ERS_00007145.
- FOMB_ERS_00007146 - 00007161.
- FOMB_ERS_00007162 - 00007186.
- FOMB_ERS_00007187 - 00007212.
- FOMB_ERS_00007213 - 00007238.
- FOMB_ERS_00007248.
- FOMB_ERS_00007249.
- FOMB_ERS_00007250.
- FOMB_ERS_00007251.
- FOMB_ERS_00007252.
- FOMB_ERS_00007253.
- FOMB_ERS_00007254.
- FOMB_ERS_00007255.
- FOMB_ERS_00007256.
- FOMB_ERS_00007257.
- FOMB_ERS_00007258.
- FOMB_ERS_00007259 - 00007260.
- FOMB_ERS_00007261 - 00007298.
- FOMB_ERS_00007299 - 00007346.
- FOMB_ERS_00007347 - 00007395.
- FOMB_ERS_00007396 - 00007432.
- FOMB_ERS_00007433 - 00007435.
- FOMB_ERS_00007436 - 00007439.
- FOMB_ERS_00007440 - 00007448.
- FOMB_ERS_00007449 - 00007450.
- FOMB_ERS_00007449.
- FOMB_ERS_00007451 - 00007575.
- FOMB_ERS_00007576.
- FOMB_ERS_00007577 - 00007578.
- FOMB_ERS_00007579.
- FOMB_ERS_00007580 - 00007581.
- FOMB_ERS_00007580.
- FOMB_ERS_00007582.
- FOMB_ERS_00007583 - 00007884.

Exhibit 2. Materials Considered

- FOMB_ERS_00007885.
- FOMB_ERS_00007886 - 00007901.
- FOMB_ERS_00007902 - 00007938.
- FOMB_ERS_00007939 - 00007975.
- FOMB_ERS_00007994.
- FOMB_ERS_00007995.
- FOMB_ERS_00007996.
- FOMB_ERS_00007997.
- FOMB_ERS_00007998.
- FOMB_ERS_00007999.
- FOMB_ERS_00008000.
- FOMB_ERS_00008001.
- FOMB_ERS_00008002.
- FOMB_ERS_00008003.
- FOMB_ERS_00008004.
- FOMB_ERS_00008005.
- FOMB_ERS_00008006.
- FOMB_ERS_00008007.
- FOMB_ERS_00008008.
- FOMB_ERS_00008009.
- FOMB_ERS_00008010.
- FOMB_ERS_00008011.
- FOMB_ERS_00008012.
- FOMB_ERS_00008013.
- FOMB_ERS_00008014.
- FOMB_ERS_00008015 - 00008016.
- FOMB_ERS_00008017 - 00008054.
- FOMB_ERS_00008055 - 00008102.
- FOMB_ERS_00008103 - 00008151.
- FOMB_ERS_00008152 - 00008188.
- FOMB_ERS_00008189 - 00008191.
- FOMB_ERS_00008192 - 00008195.
- FOMB_ERS_00008196 - 00008204.
- FOMB_ERS_00008205 - 00008211.
- FOMB_ERS_00008205.
- FOMB_ERS_00008212.
- FOMB_ERS_00008213 - 00008252.
- FOMB_ERS_00008253.
- FOMB_ERS_00008254 - 00008269.
- FOMB_ERS_00008270 - 00008306.
- FOMB_ERS_00008307 - 00008343.
- FOMB_ERS_00008362.
- FOMB_ERS_00008363.
- FOMB_ERS_00008364.
- FOMB_ERS_00008365.
- FOMB_ERS_00008366.
- FOMB_ERS_00008367.
- FOMB_ERS_00008368.
- FOMB_ERS_00008369.
- FOMB_ERS_00008370.
- FOMB_ERS_00008371.
- FOMB_ERS_00008372.
- FOMB_ERS_00008373.
- FOMB_ERS_00008374.
- FOMB_ERS_00008375.
- FOMB_ERS_00008376.
- FOMB_ERS_00008377.

Exhibit 2. Materials Considered

- FOMB_ERS_00008378.
- FOMB_ERS_00008380.
- FOMB_ERS_00008381.
- FOMB_ERS_00008382 - 00008384.
- FOMB_ERS_00008385 - 00008457.
- FOMB_ERS_00008458.
- FOMB_ERS_00008459 - 00008501.
- FOMB_ERS_00008502.
- FOMB_ERS_00008503 - 00008504.
- FOMB_ERS_00008505 - 00008542.
- FOMB_ERS_00008543 - 00008590.
- FOMB_ERS_00008591 - 00008639.
- FOMB_ERS_00008640 - 00008676.
- FOMB_ERS_00008677 - 00008679.
- FOMB_ERS_00008680 - 00008683.
- FOMB_ERS_00008684 - 00008692.
- FOMB_ERS_00008693 - 00008704.
- FOMB_ERS_00008705.
- FOMB_ERS_00008706 - 00008707.
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- FOMB_ERS_00009114 - 00009159.
- FOMB_ERS_00009160.

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- FOMB_ERS_00009161 - 00009162.
- FOMB_ERS_00009163 - 00009200.
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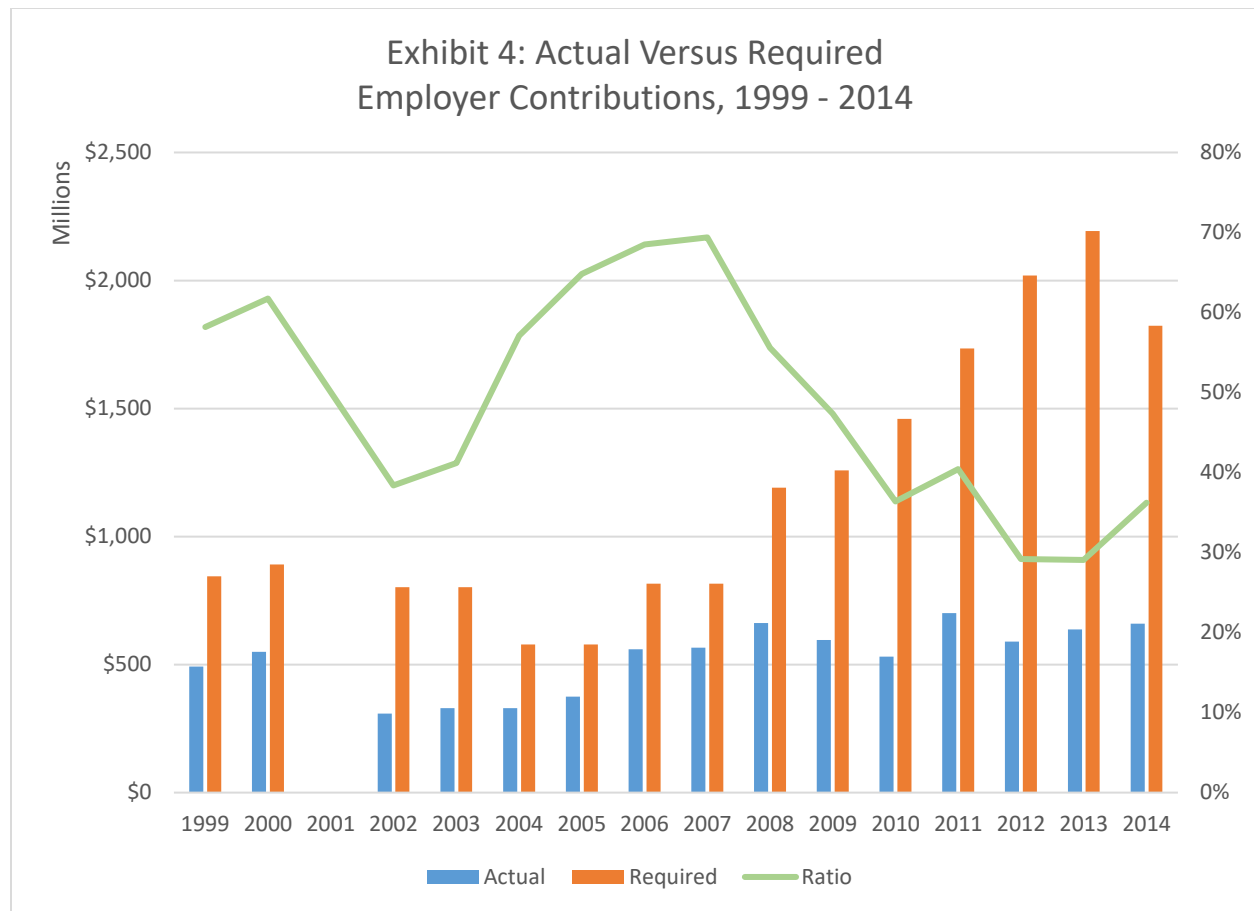
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Exhibit 3

Changes in Fiduciary Net Position, Selected Years

	2007	2016
Additions		
Contributions		
Employer Contributions	\$374,394,000	\$579,657,000
Member Contributions	\$338,791,000	\$333,633,000
Early Retirement Programs	\$69,097,000	\$3,146,000
Interest on cultural loans		\$452,000
Appropriations for Special Laws	\$17,000,000	\$196,674,000
Total Contributions	\$799,282,000	\$1,113,562,000
Investment Income		
Interest Income	\$68,231,000	\$59,651,000
Dividend Income	\$14,494,000	\$277,000
Net Appreciation of Investments	\$364,185,000	\$870,000
Insurance Premiums	\$2,441,000	
Other Income	\$17,431,000	\$31,970,000
Investment Related Expenses	-\$12,940,000	-\$2,631,000
Net Investment Income	\$453,842,000	\$90,137,000
Total Additions	\$1,253,124,000	\$1,203,699,000
Deductions		
Refund of Member Contributions	\$33,305,000	\$34,937,000
Annuities and Death Benefits	\$814,658,000	\$1,335,966,000
Special Law Benefits	\$17,000,000	\$196,674,000
Insurance Claims	\$2,118,000	
Interest on cultural loans		\$452,000
Administrative Expenses	\$35,873,000	\$27,670,000
Other Expenses		\$9,401,000
Cost of Bonds		\$196,211,000
Total Deductions	\$902,954,000	\$1,801,311,000
Net Increase (or Decrease) in Market Value of Assets	\$350,170,000	-\$597,612,000

Sources: Statement of Changes in Fiduciary Net Position, ERS Actuarial Valuation Reports, 2007 & 2016



Source: ERS Actuarial Valuation Reports, 2005 – 2014.